Section 8 – Attachments

Emission Inventories

Section 51.1008 of 40 CFR Part 51 requires an emissions inventory for base and projected attainment years for any $PM_{2.5}$ NAA. This was completed as part of the SIP submitted for the 2012 $PM_{2.5}$ standard. Pollutants inventoried for the Allegheny County $PM_{2.5}$ NAA include primary (direct) $PM_{2.5}$ along with precursors SO_2, NO_x, VOC, and NH_3. PM10 is also inventoried.

The emissions inventories were compiled for all major and some minor sources within Allegheny County. Sources in the emissions inventories include stationary point sources, area sources, nonroad mobile sources, and onroad mobile sources. Fire and biogenic emissions are also included in the inventory. All emissions used for the emissions inventories for Allegheny County match those used in the modeling demonstration.

The year 2011 was used for base case emissions inventory, projected to a future case attainment year of 2021. Local projections were focused on $PM_{2.5}$ and precursor reductions from stationary point source emissions, while regional projections were based on reductions from all sectors as incorporated into the MARAMA inventories. Emissions are given in actual values based on pollutant emission factors and throughputs or capacities of each emission source.

Source categories used for the emissions inventories are described below. The inventory listings by process are included in Appendix D (Emissions Inventories) of the Allegheny county Portion of the Pennsylvania SIP for PM-2.5 2012 standards, submitted to EPA by the state on September 30, 2019 (”2019 SIP”), including a summary of specific local source revisions and projections.

- Stationary point (“point”) sources are industrial or commercial sources for which ACHD collects individual annual emissions-related information. These include major and minor sources with the potential to emit 25 tons/year or more of any criteria pollutant. Actual emissions are submitted annually by each source and reviewed by ACHD for accuracy. Emissions values are based on fuel use, stack test, or emission factors available.

- Area (or “nonpoint”) sources are industrial, commercial, and residential sources that are too small or too numerous to be inventoried individually. Examples include commercial and residential fuel combustion, solvent utilization, on-shore oil and gas production, agricultural activity, and other sources. Commercial diesel marine vessels and railroad locomotives have also been included in the area source inventory. Pennsylvania Department of Environmental Protection staff develop these inventories based on population and other surrogate factors.

- Nonroad mobile (or “nonroad”) sources encompass a diverse collection of off-highway engines, including (but not limited to) trains, water traffic, outdoor power equipment,

recreational vehicles, farm and construction machinery, industrial equipment, and other sources.

- Onroad mobile (or "onroad") sources include passenger cars, light-duty trucks, heavy-duty trucks, buses, and motorcycles. The Motor Vehicle Emissions Simulator (MOVES) model was utilized to generate emissions based on traffic counts, vehicle speeds, vehicle population growth, and other factors.

- Fire and biogenic emissions are included in the inventories as additional sources. Fire emissions from inadvertent (wildfire) or intentional (prescribed) biomass burning are as estimated by EPA's FIRES inventory. Biogenic (non-anthropogenic) emissions from vegetation and soils are estimated by the Biogenic Emission Inventory System (BEIS) model. These emissions are held constant from base case to future case. (In Appendix D.3 (Area Sources), fire and biogenic emissions are included at the end of the area source inventories.)

Emissions inventory summaries for base and future projected cases are shown in Tables 4-1 and 4-2[1] of the 2019 SIP by sector for Allegheny County.

Table Error! No text of specified style in document.**-1. Base Case 2011 Emissions by Sector (tons/year)**

Allegheny County (2011)	**$PM_{2.5}$**	**$PM_{2.5}$ (filt)**	**$PM_{2.5}$ (cond)**	**PM_{10}**	**SO_2**	**NO_x**	**VOC**	**NH_3**
Point Sources	2,503	1,338	1,164	2,987	13,460	11,128	1,669	207
Area Sources	2,491	2,011	480	4,683	1,528	6,979	11,200	621
Nonroad Mobile Sources	361	361	0	378	11	3,921	3,780	5
Onroad Mobile Sources	450	450	0	984	78	13,259	7,383	304
Fires	24	24	0	29	2	5	64	4
Biogenics	0	0	0	0	0	166	5,876	0
Total	**5,829**	**4,185**	**1,644**	**9,061**	**15,080**	**35,460**	**29,972**	**1,141**

Table Error! No text of specified style in document.**-2. Future Case Projected 2021 Emissions by Sector (tons/year)**

Allegheny County (2021)	**$PM_{2.5}$**	**$PM_{2.5}$ (filt)**	**$PM_{2.5}$ (cond)**	**PM_{10}**	**SO_2**	**NO_x**	**VOC**	**NH_3**
Point Sources	2,256	1,256	999	2,722	5,921	7,928	1,534	202
Area Sources	2,708	2,226	472	5,486	1,079	6,664	10,221	615

[1] Note: Due to the rounding to whole tons, the sum of the sectors in Tables 4-1 and 4-2 may not add up to the totals. Detailed emissions by process/category in Appendix D (Emissions Inventories) are given in thousandths of a ton (three decimal places).

Nonroad Mobile Sources	234	234	0	248	5	2,212	2,752	6
Onroad Mobile Sources	266	266	0	722	31	5,708	3,479	209
Fires	24	24	0	29	2	5	64	4
Biogenics	0	0	0	0	0	166	5,876	0
Total	**5,488**	**4,007**	**1,471**	**9,207**	**7,039**	**22,684**	**23,926**	**1,037**

Note: For the emissions inventories in Tables 4-1 and 4-2 and in Appendix D (Emissions Inventories), primary $PM_{2.5}$ emissions are also separated into filterable and condensable fractions for point and area sources. If not reported as individual fractions, $PM_{2.5}$ emissions are assumed to be composed of filterable component only, with the condensable component equal to zero. For concentrations, total $PM_{2.5}$ (and PM_{10}) includes both primary (released into the air as a particle) and secondary (chemically transformed from precursors) components.

Additionally, PM_{10} by definition includes all $PM_{2.5}$ plus PM_{coarse} (particles greater than 2.5 µm in diameter but less than or equal to 10 µm). The condensable component of particulate matter is considered to exist entirely in the 2.5 µm fraction.

Looking at emissions from all sectors, Figure 4-2 shows a pie chart of the percentages of total $PM_{2.5}$ and precursor emissions by sector in Allegheny County for 2011.

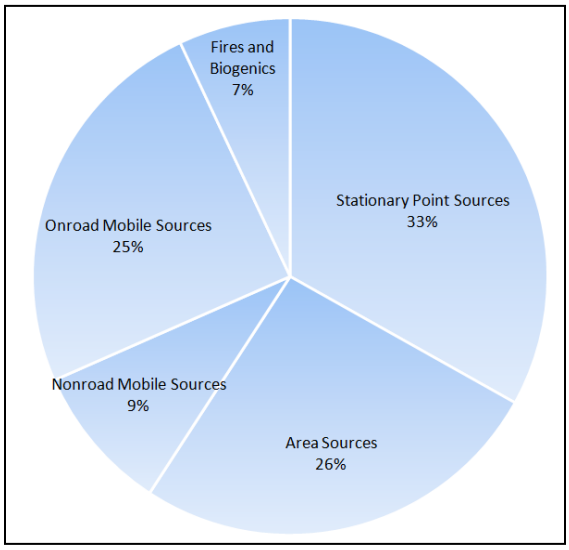

Figure Error! No text of specified style in document.**-1. Allegheny County Total $PM_{2.5}$ and Precursor Emissions, Percentages by Sector, 2011**

Figure 4-2 shows that while point sources are the largest overall contributors of $PM_{2.5}$ and precursors (33%), other sectors such as area and onroad mobile sources are also considerable contributors. Overall emissions from all sectors were reduced by 27,308 tons/year of $PM_{2.5}$ and precursors from 2011 to 2021 in Allegheny County in this demonstration.

The projects in this application are either non-road mobile sources, or, in the case of the U.S. Steel Clairton PEC baghouse, a point source. Although the overall tonnage of these projects are not large in comparison with the entire County, they are significant with respect to the Liberty/Clairton area, and these sources directly affect the most intensely polluted area, and affect a significant population of disadvantaged persons.

Section 8 – Attachments (continued)

Emission Reduction Calculations

1. USS Clairton Tug boats

Vessel Engine Emissions Estimates					
Conversion factors					
1.341 hp = 1 kW					
0.7457 kW = 1 hp					
Old Engine - EPA Commercial Marine Tier 1 (between 301 - 603 hp)					
Hours/yr	Hours/lifetime	Max Load (bhp)			
8000	48000	500	250 avg bhp times 2 engines		
NOx (g/bkW-hr)	9.2		NOx (g/bhp-hr)	6.86044	
HC (g/bkW-hr)	1.3		HC (g/bhp-hr)	0.96941	
PM (g/bkW-hr)	0.54		PM (g/bhp-hr)	0.402678	
CO (g/bkW-hr)	11.4		CO (g/bhp-hr)	8.50098	
Fuel Consumption (lb/bhp-hr)	0.34				
Old Engine		**NOx (tpy)**	**HC (tpy)**	**PM (tpy)**	**CO (tpy)**
Fuel Consumed (gal) - annual	97,129	30.25	4.27	1.78	37.48
Fuel Consumed (gal) - lifetime	582,774	181.50	25.65	10.65	224.90
New Engine - EPA Commercial Marine Tier 3					
Hours/yr	Hours/lifetime	Max Load (bhp)			
8000	48000	500	same assumptions as above.		
NOx + HC (g/bkW-hr)	5.6		NOx+HC (g/bhp-hr)	4.17592	
PM (g/bkW-hr)	0.11		PM (g/bhp-hr)	0.082027	
CO (g/bkW-hr)	5		CO (g/bhp-hr)	3.7285	
Fuel Consumption (lb/bhp-hr)	0.356				
New Engine		**NOx + HC (tpy)**	**PM (tpy)**	**CO (tpy)**	
Fuel Consumed (gal) - annual	101,700	18.41	0.36	16.44	
Fuel Consumed (gal) - lifetime	610,200	110.48	2.17	98.64	
		NOx + HC (tpy)	**PM (tpy)**	**CO (tpy)**	
Annual Reductions		16.11	1.41	21.04	
Lifetime Reductions		96.67	8.48	126.26	

Table 1
EPA Tier 1-3 nonroad diesel engine emission standards, g/kWh (g/bhp·hr)

Engine Power	Tier	Year	CO	HC	NMHC+NOx	NOx	PM
kW < 8 (hp < 11)	Tier 1	2000	8.0 (6.0)	-	10.5 (7.8)	-	1.0 (0.75)
	Tier 2	2005	8.0 (6.0)	-	7.5 (5.6)	-	0.8 (0.6)
8 ≤ kW < 19 (11 ≤ hp < 25)	Tier 1	2000	6.6 (4.9)	-	9.5 (7.1)	-	0.8 (0.6)
	Tier 2	2005	6.6 (4.9)	-	7.5 (5.6)	-	0.8 (0.6)
19≤ kW < 37 (25 ≤ hp < 50)	Tier 1	1999	5.5 (4.1)	-	9.5 (7.1)	-	0.8 (0.6)
	Tier 2	2004	5.5 (4.1)	-	7.5 (5.6)	-	0.6 (0.45)
37 ≤ kW < 75 (50 ≤ hp < 100)	Tier 1	1998	-	-	-	9.2 (6.9)	-
	Tier 2	2004	5.0 (3.7)	-	7.5 (5.6)	-	0.4 (0.3)
	Tier 3	2008	5.0 (3.7)	-	4.7 (3.5)	-	-†
75 ≤ kW < 130 (100 ≤ hp < 175)	Tier 1	1997	-	-	-	9.2 (6.9)	-
	Tier 2	2003	5.0 (3.7)	-	6.6 (4.9)	-	0.3 (0.22)
	Tier 3	2007	5.0 (3.7)	-	4.0 (3.0)	-	-†
130 ≤ kW < 225 (175 ≤ hp < 300)	Tier 1	1996	11.4 (8.5)	1.3 (1.0)	-	9.2 (6.9)	0.54 (0.4)
	Tier 2	2003	3.5 (2.6)	-	6.6 (4.9)	-	0.2 (0.15)
	Tier 3	2006	3.5 (2.6)	-	4.0 (3.0)	-	-†
225 ≤ kW < 450 (300 ≤ hp < 600)	Tier 1	1996	11.4 (8.5)	1.3 (1.0)	-	9.2 (6.9)	0.54 (0.4)
	Tier 2	2001	3.5 (2.6)	-	6.4 (4.8)	-	0.2 (0.15)
	Tier 3	2006	3.5 (2.6)	-	4.0 (3.0)	-	-†
450 ≤ kW < 560 (600 ≤ hp < 750)	Tier 1	1996	11.4 (8.5)	1.3 (1.0)	-	9.2 (6.9)	0.54 (0.4)
	Tier 2	2002	3.5 (2.6)	-	6.4 (4.8)	-	0.2 (0.15)
	Tier 3	2006	3.5 (2.6)	-	4.0 (3.0)	-	-†
kW ≥ 560 (hp ≥ 750)	Tier 1	2000	11.4 (8.5)	1.3 (1.0)	-	9.2 (6.9)	0.54 (0.4)
	Tier 2	2006	3.5 (2.6)	-	6.4 (4.8)	-	0.2 (0.15)

† Not adopted, engines must meet Tier 2 PM standard.

2. U.S. Steel Clairton baghouse emissions

The PEC baghouse improvement project will include reductions in particulate matter emissions as well as improvements to dispersion. The baghouse project will include an approximate 2% increase to capture efficiency through increased flow and negative pressure (draft) at the hood where the pushing emissions are captured. This will have a significant impact on reductions to fugitive emissions from coke oven pushing on Batteries 13, 14, 15, 19 and 20. In addition to the reduction in emissions, the baghouse project design includes removing the lower-height lower flow multiple exhaust point stacks with one stack five meters higher. A taller single stack alone will improve the dispersion of particulate matter resulting in greater than 0.07 ug/m3 annually; the increased flow will be greater. This was established by running an AERMOD run with existing and future parameters, and modeling conditions set by the Allegheny County portion of the Pennsylvania SIP for 2012 PM-2.5 Standards.

3. U.S. Steel electric train

The future case, and electric train, will have no emissions. Therefore, the improvement is a total removal of the exiting emissions.

United States Environmental Protection Agency

Office of Transportation and Air Quality
EPA-420-B-16-024
March 2016

Locomotives: Exhaust Emission Standards

Duty-Cycle [b]	Tier	Year [c]	HC [i] (g/hp-hr)	NOx (g/bhp-hr)	PM (g/bhp-hr)	CO (g/bhp-hr)	Smoke (percentage) [m]	Minimum Useful Life (hours / years / miles) [n]	Warranty Period (hours / years / miles) [n]
Line-haul	Tier 0	1973-1992 [d, e]	1.00	9.5 [ABT]	0.22 [ABT]	5.0	30 / 40 / 50	(7.5 x hp) / 10 / 750,000 [o]	1/3 * Useful Life
	Tier 1	1993-2004 [d, e]	0.55	7.4 [ABT]	0.22 [ABT]	2.2	25 / 40 / 50	(7.5 x hp) / 10 / 750,000 [o]	
								(7.5 x hp) / 10 / -	
	Tier 2	2005-2011 [d]	0.30	5.5 [ABT]	0.10 [k] [ABT]	1.5	20 / 40 / 50	(7.5 x hp) / 10 / -	
	Tier 3	2012-2014 [f]	0.30	5.5 [ABT]	0.10 [ABT]	1.5	20 / 40 / 50	(7.5 x hp) / 10 / -	
	Tier 4	2015+ [g]	0.14	1.3 [ABT]	0.03 [ABT]	1.5	-	(7.5 x hp) / 10 / -	
Switch	Tier 0	1973-2001	2.10	11.8 [ABT]	0.26 [ABT]	8.0	30 / 40 / 50	(7.5 x hp) / 10 / 750,000 [o]	
	Tier 1	2002-2004 [h]	1.20	11.0 [ABT]	0.26 [ABT]	2.5	25 / 40 / 50	(7.5 x hp) / 10 / -	
	Tier 2	2005-2010 [h]	0.60	8.1 [ABT]	0.13 [i] [ABT]	2.4	20 / 40 / 50	(7.5 x hp) / 10 / -	
	Tier 3	2011-2014	0.60	5.0 [ABT]	0.10 [ABT]	2.4	20 / 40 / 50	(7.5 x hp) / 10 / -	
	Tier 4	2015+	0.14 [j]	1.3 [j] [ABT]	0.03 [ABT]	2.4	-	(7.5 x hp) / 10 / -	

Locomotive Engine Emissions Estimates

Old Engine - Switch - EPA Tier 0
Approx. Diesel Hours/yr 4380 Max Load (bhp) 1500

Emission factors from the above table:

NOx (g/bhp-hr)	11.8
HC (g/bhp-hr)	2.1
PM (g/bhp-hr)	0.26
CO (g/bhp-hr)	8

Emission Factor x hours x bhp x ton/908000grams

Results

Old Engine	NOx (tpy)	HC (tpy)	PM (tpy)	CO (tpy)
	85.46	15.21	1.88	57.94
New Engine	0	0	0	0
Emission Reduction				
	85.46	15.21	1.88	57.94

4. CSX Demmler Yard Switcher Repowers

The current locomotives will be repowered from a current Tier 0 configuration and certified to Tier 2 switcher locomotive emission standards. The horsepower of the locomotives classifies them as a line-haul locomotives; however, they are used in switcher service. Therefore, when repowered, the locomotives will be certified to Tier 3 line-haul and Tier 2 switch emission standards, consistent with the requirements of 40 CFR 1033.

Emission reductions were calculated by estimating the difference between the baseline (Tier 0) and the newly repowered (Tier 3). Emissions for each configuration were calculated using the following equation.

Emissions (tons) = [A] x [B] x [C] x [D] / [E] / [F]; where

- [A] = horsepower rating of the locomotive engine;
- [B] = load factor, representing the overall % of total available horsepower used during normal operation (typically representative of a significant time period);
- [C] = annual hours of operation, this is a representative value and not specific to any single locomotive;
- [D] = emission factor (g/bhp-hr);
- [E] = conversion factor 1 (453.59 g/lb); and
- [F] = conversion factor 2 (2,000 lb/ton

The emission factors for the baseline locomotive and new Tier-2 engines are taken from 40 CFR 1033 as excerpted and highlighted below.

Type of Standard	**Year of Original Manufacture**	**Tier**	**Standards (g/bhp-hr)**	
			NOx	PM
APPENDIX I TO PART 1033–ORIGINAL STANDARDS FOR TIER 0, TIER 1 AND TIER 2 LOCOMOTIVES				
Switch	1973-1992	Tier 0	14.0	0.72
These standards applied at the time of manufacture and are appropriate if the locomotive has not been rebuilt after 2010.				
TABLE 2 TO § 1033.101 – SWITCH LOCOMOTIVE EMISSION STANDARDS				
Switch		Tier 2	8.1	0.13

Calculation of emission reductions per locomotive is shown in the table below.

Pollutant	Tier	Hp Rating [A]	Load Factor [B]	Annual Hours [C]	E.F. (g/bhp-hr) [D]	CF1 (g/lb) [E]	CF2 (lb/ton) [F]	Annual Emissions (tons)
PM	0	3,000	13.7 %	4,500	0.72	453.59	2,000	1.47
	2				0.13			0.27
Annual Reductions (tons)								**1.20**
NOx	0	3,000	13.7 %	4,500	14.0	453.59	2,000	28.54
	2				8.1			16.51
Annual Reductions (tons)								**12.03**

From United States Steel Corporation

Environmental Protection Agency – 2019 Targeted Airshed Grant Program – Application Submittal

U. S. Steel Mon Valley Works – Clairton Plant
Allegheny County, PA
Tugboat Project and 13-15/19-20 Pushing Emissions Control Project
January 31, 2020

Introduction

United States Steel Corporation (U. S. Steel) has a long history of operations in the Mon Valley in Allegheny County. Here, U. S. Steel operates a coke-making facility (Clairton Coke Plant, Clairton, PA), steelmaking facility (Edgar Thomson Plant, Braddock, PA), and a finishing plant (Irvin Plant, West Mifflin, PA. These three facilities comprise U. S. Steel's Mon Valley Works.
While air quality in Allegheny County has greatly improved over the last several years, additional work is needed to continue to improve air quality. U. S. Steel has a long history of working collaboratively with the Allegheny County Health Department (ACHD) in employing sound environmental projects that reduce air emissions and improve air quality in the area. It is in this spirit that U. S. Steel is proud to be a sponsor of the emission reduction projects as explained below that would be implemented with the use of funding from U. S. EPA's 2019 Targeted Airshed Grant (TAG). These projects would lead to meaningful reductions and long-term air quality improvements in Allegheny County.
Allegheny County is currently designated as nonattainment with the current PM2.5 ambient air quality standard. U. S. Steel, as a proposed sponsor of the TAG, has identified two projects at the Clairton Coke Plant that will decrease PM and other air pollutants.

Clairton Tugboat Project

U. S. Steel currently owns and operates three tugboats with low-tier diesel engines used to move coal barges from storage locations along the Monongahela River to locations along the Clairton Plant where coal unloading operations can access the barge and offload the coal. The coal is the main ingredient in the coke-making process. The tugboat averages approximately 8,000 operating hours per year with an average engine load of 250 brake-horsepower. U. S. Steel is requesting TAG for replacement of the one tugboat with UEPA Commercial Marine Tier 1 engines with one tugboat with USEPA Commercial Marine Tier 3 rated engines. Due to the horsepower of the tugboat, the USEPA Commercial Marine Tier 3 rated engines are the highest rated engines compatible with the tugboat.

Tugboat Project Cost

Approximate cost for a tugboat with upgraded marine diesel engines is $2,451,955. U. S. Steel will contribute the remaining amount of the project cost above the TAG.

Tugboat Project Expected Benefits to Public Health and/or Environment

The annual emissions reductions from this project were calculated on the difference between past actual emissions as compared to future project actual emissions. Both emissions estimates were

based on two engines operating with an average brake-horsepower of 250 bhp and approximately operating 8,000 hour per year. The reductions are as follows:

NOx + HC reductions of - 16.1 tons per year
PM reductions of 1.4 tons per year
CO reductions of 21.0 tons per year

Tugboat Project Schedule and Leverage
U. S. Steel can complete the tugboat replacement project in approximately 12-16 months from project approval.

Overall Targeted Air Shed Grant Request
The request for TAG money is $2,451,955

13-15/19-20 Battery PEC Project
U. S. Steel is currently evaluating a Pushing Emission Control (PEC) Project for 13-15 Battery PEC and 19-20 PEC that will reduce emissions from pushing from 13-15 and 19-20 Batteries. The scope of the project is not fully developed, however, the project will consist of an increase in capture and control of the pushing emissions to reduce PM, PM10, and PM2.5 emissions from the coke-pushing process.

13-15/19-20 Project Cost
The project cost is estimated to be between $50 and $100 Million

13-15/19-20 Expected Benefits to Public Health and/or Environment
This project is expected to reduce PM, PM10, and PM2.5 emissions from the pushing process on 13-15/19-20. The amount of reductions has not been quantified in the early stages of the project development process.

13-15/19-20 Project Schedule and Leverage
U. S. Steel will complete the project 28 months after permit approval by ACHD. Permit applications are anticipated to be submitted on or before July 1, 2020. U. S. Steel will contribute the remaining amount of the project cost above the TAG.

Overall Targeted Air Shed Grant Request
The request for TAG money is $5 Million

Area will be Benefitted from both Projects
The Clairton, Lincoln and Liberty areas will benefit most from the project.

Note:
The attached proposal letter is for two battery-electric trains at United States Steel Clairton. This proposal is only for one of those trains.

United States Steel Corporation
Mon Valley Works – Clairton Plant
400 State Street
M. S. 71
Clairton, PA 15025

Michael S. Rhoads
Plant Manager
U. S. Steel Mon Valley Works
Clairton Plant

April 1, 2020

VIA ELECTRONIC DELIVERY

Ms. Jayme Graham
Manager – Air Quality Program
Allegheny County Health Department
301 39th Street, Bldg #7
Pittsburgh, PA 15201-1891

Re: **Letter of Support – Proposed MVW Emission Reduction Project**
Targeted Air Shed Grant Program
U. S. EPA's 2019/2020 Targeted Airshed Grant (TAG)

Dear Ms. Graham,

United States Steel Corporation (U. S. Steel) is pleased to offer this nonbinding letter of support to the Allegheny County Health Department (ACHD) in its pursuit to obtain funds from the Environmental Protection Agency's (EPA's) Targeted Air Shed Grant Program in a joint effort to improve air quality in Allegheny County. U. S. Steel successfully partnered with ACHD in 2010 in receiving approximately $2.9 million in Targeted Airshed Grant monies, for a project in which U. S. Steel leveraged approximately $32.7 million. The project was successful and helped the Liberty Clairton area demonstrate attainment with the 1997 $PM_{2.5}$ annual standard for which, after implementation of the project, U. S. EPA issued a Clean Data Finding.

As a company, U. S. Steel demonstrates its core value of environmental stewardship through three basic principles which are the responsibility of all of our employees and our operation. These principles include:

- Compliance with environmental laws and regulations;
- Continuous improvement in environmental and resource management;
- Continued reduction of emissions through innovation

U. S. Steel is pleased to offer ACHD its continued support to reduce emissions from its facilities to improve air quality in Allegheny County. U. S. Steel is interested in partnering with ACHD by proposing projects for funding that are aimed at reducing $PM_{2.5}$ and precursor emissions at our Clairton Plant in Allegheny County. The Clairton Plant pollution reduction projects would consist of using fund monies to 1) replace two tugboats equipped with low-tier diesel engines with two tugboats equipped with USEPA Commercial Marine Tier 3 rated engines to reduce particulate matter and $PM_{2.5}$ precursor emissions, 2) reduce particulate matter emissions at two coke battery Pushing Emissions Control (PEC) baghouses through increases in pushing emissions capture and control efficiency and increases to emissions dispersion, and 3) replacement of a locomotive low-tier diesel engine with a battery powered engine to reduce particulate matter and precursor emissions.

United States Steel Corporation (U. S. Steel) has a long history of operations in the Mon Valley in Allegheny County. Here, U. S. Steel operates a coke-making facility (Clairton Coke Plant, Clairton, PA), steelmaking facility (Edgar Thomson Plant, Braddock, PA), and a finishing plant (Irvin Plant, West Mifflin, PA. These three facilities comprise U. S. Steel's Mon Valley Works.

While air quality in Allegheny County has greatly improved over the last several years, additional work is needed to continue to improve air quality. U. S. Steel has a long history of working collaboratively with the Allegheny County Health Department (ACHD) in employing sound environmental projects that reduce air emissions and improve air quality in the area. It is in this spirit that U. S. Steel is proud to be a sponsor of the emission reduction projects as explained below that would be implemented with the use of funding from U. S. EPA's 2019/2020 Targeted Airshed Grant (TAG). These projects would lead to meaningful reductions and long-term air quality improvements in Allegheny County.

Allegheny County is currently designated as nonattainment with the current PM2.5 ambient air quality standard. U. S. Steel, as a proposed sponsor of the TAG, has identified three projects at the Clairton Coke Plant that will decrease PM and other air pollutants.

U. S. Steel currently owns and operates three tugboats with low-tier diesel engines used to move coal barges from storage locations along the Monongahela River to locations along the Clairton Plant where coal unloading operations can access the barge and offload the coal. The coal is the main ingredient in the coke-making process. The tugboats average approximately 8,000 operating hours per year with an average engine load of 250 brake-horsepower. U. S. Steel is requesting TAG funds for replacement of the two USEPA Commercial Marine Tier 1 powered tugboats with two USEPA Commercial Marine Tier 3 powered tugboats. Due to the horsepower of the tugboat, the USEPA Commercial Marine Tier 3 rated engines are the highest rated engines compatible with the tugboat.

In addition, U. S. Steel is currently evaluating a Pushing Emission Control (PEC) Project for 13-15 Battery PEC and 19-20 Battery PEC that will reduce emissions from pushing from 13-15 and 19-20 Batteries. The project would consist of an increase in capture, control, and improved dispersion of the pushing emissions to reduce PM, PM10, and PM2.5 emissions from the coke-pushing process. U. S. Steel is requesting TAG funds for a portion of the baghouse project.

Finally, U. S. Steel currently owns and operates several locomotives that move railcars for the loading and transport of coke for shipment to various coke customers. The coke is an ingredient in the iron-making process at steel-making facilities' blast furnaces throughout the country. The locomotive project includes replacing one locomotive's low-tier diesel engine with a battery powered engine, thereby reducing the locomotives direct emissions entirely. The locomotive averages approximately 4,380 operating hours per year with an average engine load of 1,500 brake-horsepower. U. S. Steel is requesting TAG funds for replacement of the one locomotive low-tier diesel engine with a battery powered engine.

A reduction in emissions would be pivotal in aiding the area to reach attainment with the

national ambient air quality standards. In addition, the reductions in NO_x would result in reductions of $PM_{2.5}$ and ozone, as NO_x, is a precursor for $PM_{2.5}$ and ozone. In summary, $PM_{2.5}$ and NO_x would be significantly reduced through the tugboat and locomotive engine replacement projects. A summary of the emission reductions and costs are provided below:

Environmental and Cost Basis

Estimated Emission Reductions Project for the Clairton Plant Projects			
Task	**NO_x+HC**	**PM**	**CO**
Tugboat engine replacements	16 tpy	1.4 tpy	21 tpy
PEC emissions reductions	Under Development		
Locomotive engine replacement	100 tpy	1.9	58 tpy
Total estimated emission reduction*	**116 tpy**	**3.3+ tpy**	**79 tpy**

- In addition, meaningful reductions air toxics are anticipated by implementation of the project.

Estimated Cost for Implementation of the Clairton Plan Emission Reduction Projects	
Item description	**Estimated Cost**
Task 1	
Tugboat replacements	$4,900,000
Task 2	
PEC emissions reductions	$50,000,000+
Task 3	
Locomotive engine replacement	$2,841,183
Total Project Total	**$57,741,183+**
Total TAG Request	**$12,741,183**

U. S. Steel is committed to implementing the PEC emissions reductions and improved dispersion project. Implementation of the Tugboat engine replacements and Locomotive engine replacement projects is contingent upon the following factors:

- Engineering and regulatory feasibility;
- Award of $12,741,183 of grant monies from the Targeted Air Shed Grant Program;

We appreciate the opportunity to continue to improve the communities in which we operate and are pleased to offer our continued support to ACHD in obtaining the grant that is necessary to support this proposed project.

Sincerely,

Michael S. Rhoads

Plant Manager, Clairton Plant
United States Steel Corporation

Raghu Chatrathi
Sr. Director PSHE

500 Water Street – J275
Jacksonville, Florida 32202
(904) 366-3858
Raghu_Chatrathi@csx.com

March 26, 2020

Ms. Jayme Graham
Manager, Air Quality Program
Allegheny County Health Department
301 39th Street, Building #7
Pittsburgh, PA 15201-1811

RE: EPA 2019 Targeted Air Shed Grant Program
CSXT Switch Locomotive Repower Project
McKeesport/Demmler Rail Yard, Pittsburgh, PA

Dear Ms. Graham:

CSX Transportation, Inc. (CSXT) is pleased to offer this letter of support for Allegheny County Health Department's grant application to repower two conventional diesel switcher locomotive to a higher efficiency low emission single engine locomotives. CSXT is interested in repowering two conventional diesel switcher locomotive located at our McKeesport/Demmler Rail Yard, near Pittsburgh, PA and, is committing to provide in-kind services in the form of project management and oversight of the project implementation.

This highly cost-effective project will provide immediate air quality benefits, reducing ozone precursors (NOX + VOC) and diesel particulate matter (DPM). The project consists of diesel engine repowers, resulting in deployment of two low emission locomotives that achieve immediate emission reductions beyond what is required by current regulations.

Based on current pricing estimates for similar repower projects, the total cost is estimated at $4.4 million. CSXT is committed to providing both the project management and administrative support for the repower project. We appreciate the opportunity to support this very beneficial project. Should you have any questions, please feel free to contact me.

Sincerely,

Raghunath S. Chatrathi

Raghu Chatrathi
Sr. Director - PSHE

Section 8 – Attachments (continued)

Biographical Sketches

Dr. Debra Bogen, M.D.,
Director, Allegheny County Health Department
Dr. Bogen was appointed Director of the Allegheny County Health Department in 2020. The Health Director serves as Secretary to the Allegheny County Board of Health and is the highest ranking official in the Health Department, responsible for overseeing all of its programs and activities.
The Vice Chair for Education in the Department of Pediatrics with UPMC Children's Hospital of Pittsburgh, Dr. Bogen earned her medical degree from the University of Colorado School of Medicine and completed post-graduate work at Johns Hopkins University. She is a Professor of Pediatrics, with secondary appointments in Psychiatry and in Clinical and Translational Science.

Jayme Graham
Manager, ACHD Air Quality Program
As the Manager of the Allegheny County Health Department's Air Quality Program, Ms. Graham is responsible for overseeing all of its programs and activities including permitting, enforcement, monitoring and regulatory planning/development and data analysis. Ms. Graham joined the ACHD in 1982 as an Air Pollution Control Engineer and was Section Head of Planning before being appointed Manager of the Program in 2014. Ms. Graham received her B.S. in Chemical Engineering from the University of Pittsburgh. She has held numerous positions in the Air & Waste Management Association.

Sandra Etzel
Manager, Planning & Data Analysis, ACHD Air Quality Program
Ms. Etzel has responsibility for development of the State Implementation Plan for the Allegheny County PM2.5 Non-Attainment Area, and as such, has extensive and in-depth knowledge of the technical and regulatory matters associated with reaching attainment for the Allegheny County PM2.5 Targeted Air Shed.
Ms. Etzel received a B.S. in Biology from Dickinson College and a B.S. and M.S. in Electrical Engineering from the University of Pittsburgh.

Jason Maranche
Air Pollution Control Engineer III, ACHD Air Quality Program
Mr. Maranche conducted the detailed modeling required for the development of the State Implementation Plan for the Allegheny County and Liberty Clairton PM2.5 Non-Attainment Areas, and as such, has extensive and in-depth knowledge of the technical and regulatory matters associated with reaching attainment for the Allegheny County PM2.5 Targeted Air Shed.
Mr. Maranche received a BS in Chemical Engineering from the Pennsylvania State University.

Thomas Lattner
Air Pollution Control Engineer III, ACHD Air Quality Program
Mr. Lattner is responsible for regulatory development and various diesel emission-reducing retrofit/repower/replacement projects funded federally and through local sources. Mr. Lattner has coordinated several diesel and woodstove exchange projects funded by federal grant awards.
Mr. Lattner received a BS in Chemical Engineering from the University of Pittsburgh.

Kim Joyce
Fiscal Manager ACHD Finance - in kind
Ms. Kim Joyce is the fiscal manager at the Allegheny County Health Department. She will oversee all fiscal issues related to this project including contract development and appropriate grants management.
Ms. Joyce received a BS in Accounting from Robert Morris University as well as an MBA from Point Park University.

Keith Horner
Grants Manger ACHD Finance
Grants Manager ACHD in kind
Mr. Keith Horner, grants manager at the Allegheny County Health Department will oversee and assure that all grant financial reporting and deliverables are completed in an accurate and timely manner in accordance with grant requirements.
Mr. Horning received a BS from Washington and Jefferson College.

Fiscal Officer TBD 1. FTE (TBA)
This individual will report to Keith Horner and be responsible for all fiscal issues related to the project. He/she will create reports for grant funding and monitor expenditures. She/he will also coordinate efforts with the program to ensure accurate accounting work as well as timely payments per contract.

Job Description: Contract Administration (TBA): 1FTE
This position will be responsible for working on all contracts, including supporting the development of all contracts and contract management with partners. This individual will report to Kim Joyce.

Section 8 – Attachments (continued)

Quality Assurance Narrative Statement

ACHD-AQP Quality Policy

It is the policy of ACHD-AQP that all environmental data operations result in the collection of environmental data of known and documented quality, suitable for its intended use. This policy is implemented by ensuring that for all data production efforts, adequate QA procedures are employed throughout the entire process from studying the design of the process through data usage.

Specifically, it is the policy of ACHD-AQP that:

- Each air quality activity that is responsible for the characterization of environmental systems and the health of human populations; or the direct measurement of environmental conditions or releases; or the use of environmental data collected from other sources will be part of an effective quality system. The quality system is documented in the ACHD Quality Management Plan.

- The objectives for generating any new environmental data should be determined prior to data collection and control methods can be applied to ensure a level of data quality commensurate with the intended use(s) for the data. These objectives will be documented in the project's Quality Assurance Project Plan (QAPP).

- Prior to the use of environmental data collected from other sources, such as literature, industry surveys, databases or computerized models, the data should be evaluated to ensure a level of data quality that is commensurate with the intended use(s) of the data.

- Any program or activity that generates environmental data shall develop and implement a QAPP and/or Standard Operating Procedures (SOPs) which specify the detailed procedures required to assure production of data of known quality and sufficient quantity to support environmental decisions.